

CLAIMS

What is claimed is:

1. An apparatus for outputting a plurality of signals, comprising:
 - a plurality of tuners for tuning to a plurality of programs;
 - a plurality of decompressors; and
 - a plurality of output ports connected to the plurality of decompressors,wherein at least two of the plurality of output ports are connected to different tuners of the plurality of tuners.
2. An apparatus for outputting a plurality of audio signals for at least one video signal, comprising:
 - a plurality of tuners for tuning to a plurality of programs;
 - a plurality of video decompressors; and
 - a plurality of audio decompressors, wherein each of the plurality of audio and video decompressors corresponding to and connected to the plurality of tuners and wherein the plurality of programs are comprised of both audio and video signals and wherein the at least one video signal may have more than one of the plurality of audio signals corresponding therewith.
3. The apparatus according to claim 2, further comprising a plurality of output ports connected to the plurality of decompressors, wherein at least two of the plurality of output ports are connected to different tuners of the plurality of tuners.
4. The apparatus according to claim 2, wherein the at least one video signal having at least one audio signal in a first language and at least one audio signal in a second language corresponding therewith.
5. The apparatus according to claim 2, wherein the at least one video signal having at least two stereo audio signals in a first language and at least one audio signal in a second language corresponding therewith.
6. The apparatus according to claim 2, further comprising a switch connected to the plurality of audio decompressors, for accommodating switching between the plurality of audio decompressors.

1 7. An apparatus for displaying a picture on a picture, comprising:
2 a plurality of tuners for tuning to a plurality of programs;
3 a plurality of audio decompressors;
4 a plurality of video decompressors; and
5 a plurality of graphics/text decompressors, each of the plurality of
6 audio, video and graphics/text decompressors corresponding to and connected to the
7 plurality of tuners.

8 8. The apparatus according to claim 7, further comprising:
9 a plurality of demodulators;
10 a plurality of demultiplexors; and
11 a plurality of decryptors, wherein each of the plurality of demodulators, each
12 of the plurality of demultiplexors and each of the plurality of decryptors are
13 connected in series and correspond to the plurality of tuners and the plurality of
14 decompressors.

15 9. The apparatus according to claim 8, further comprising a microprocessor
16 connected to the plurality of tuners, the plurality of demultiplexors and the plurality of
17 decryptors, for coordinating signal processing.

18 10. The apparatus according to claim 8, further comprising:
19 a plurality of video/graphics/text demultiplexors corresponding to and
20 connected to the plurality of decryptors; and
21 a plurality of memory corresponding to and connected to the plurality of
22 video/graphics/text demultiplexors and corresponding and connected to the plurality
23 of video decompressors.

24 11. The apparatus according to claim 7, further comprising a combiner connected
25 to the plurality of decompressors for combining the plurality of the program signals.

26 12. The apparatus according to claim 7, further comprising a combiner connected
27 to the plurality of decompressors for combining the plurality of the program signals

1 wherein the combiner overlays at least one first program signal of the plurality of
2 program signals over at least one second program signal of the plurality of signals.

3 13. The apparatus according to claim 7, further comprising a combiner connected
4 to the plurality of decompressors for combining the plurality of the program signals
5 wherein the combiner splits a screen between at least two of the plurality of the
6 program signals.

7 14. The apparatus according to claim 11, further comprising a plurality of NTSC
8 encoders connected to the combiner for producing NTSC video output.

9 15. The apparatus according to claim 14, further comprising a plurality of RF
10 modulators connected to and corresponding to the plurality of audio decompressors
11 and connected to and corresponding to the plurality of NTSC encoders.

12 16. An apparatus for displaying a picture on a picture, comprising:
13 a plurality of tuners for tuning to a plurality of programs, wherein the
14 plurality of programs are comprised of both audio and video signals and wherein at
15 least one video signal may have a plurality of audio signals corresponding therewith;
16 a plurality of decompressors connected to the plurality of tuners; and
17 a plurality of output ports connected to the plurality of decompressors,
18 wherein at least two of the plurality of output ports are connected to different tuners of
19 the plurality of tuners.

20 17. An apparatus for displaying a picture on a picture according to claim 16,
21 further comprising:

22 a plurality of demodulators;
23 a plurality of demultiplexors;
24 a plurality of decryptors, wherein the plurality of demodulators, the
25 plurality of demultiplexors and the plurality of decryptors are connected in series
26 between and correspond to the plurality of tuners and the plurality of decompressors;
27 and
28 a video combiner connected to the plurality of decompressors for
29 combining the plurality of the program signals; and

1 18. The apparatus according to claim 17, wherein the plurality of decompressors
2 further comprises:

3 a plurality of audio decompressors;

4 a plurality of video decompressors; and

5 a plurality of graphics/text decompressors.

6 a plurality of NTSC encoders connected to the video combiner for
7 producing NTSC video output;

8 a plurality of RF modulators connected to and corresponding to the
9 plurality of audio decompressors and connected to and corresponding to the plurality
10 of NTSC encoders; and

11 a switch connected to the plurality of audio decompressors, for
12 accommodating switching between the plurality of audio decompressors.

13 19. The apparatus according to claim 18, wherein the at least one video signal
14 having at least one audio signal in a first language and at least one audio signal in a
15 second language corresponding therewith.

16 20. The apparatus according to claim 18, wherein the at least one video signal
17 having at least two stereo audio signals in a first language and at least one audio signal
18 in a second language corresponding therewith.

19 21. A method for outputting a plurality of signals, comprising:

20 tuning to a plurality of programs;

21 decompressing the plurality of programs; and

22 outputting a plurality of decompressed signals from the plurality of
23 programs.

24 22. A method for outputting a plurality of audio signals for at least one video
25 signal, comprising:

26 tuning to a plurality of programs;

27 decompressing the plurality of audio signals from the plurality of
28 programs;

1 decompressing a plurality of video signals from the plurality of
2 programs;
3 decompressing a plurality of graphics and text signals from the
4 plurality of programs, wherein the plurality of programs are comprised of both audio
5 and video signals and wherein the at least one video signal may have more than one of
6 the plurality of audio signals corresponding therewith; and

7 23. The method according to claim 22, further comprising the step of switching
8 between the plurality of audio signals.

9 24. The method according to claim 23, wherein the step of switching between the
10 plurality of audio signals further comprises:

11 switching between at least one audio signal in a first language
12 corresponding to the video signal and at least one audio signal in a second language
13 corresponding to the video signal.

14 25. The method according to claim 23, wherein the step of switching between the
15 plurality of audio signals further comprises:

16 switching between at least two stereo audio signals in a first language
17 corresponding to the video signal and at least one audio signal in a second language
18 corresponding to the video signal.

19 26. A method for displaying a picture on a picture, comprising:

20 tuning to a plurality of programs;
21 decompressing a plurality of audio signals from the plurality of
22 programs;

23 decompressing a plurality of video signals from the plurality of
24 programs; and

25 decompressing a plurality of graphics and text signals from the
26 plurality of programs.

27 27. The method according to claim 26, further comprising the steps of:

28 demodulating the plurality of programs;
29 demultiplexing the plurality of programs; and

1 decrypting the plurality of programs.

2 28. The method according to claim 26, further comprising the step of:
3 combining the plurality of decompressed program signals.

4 29. The method according to claim 28, wherein the step of combining further
5 comprises overlaying at least one first program signal of the plurality of program
6 signals over at least one second program signal of the plurality of programs.

7 30. The method according to claim 28, wherein the step of combining further
8 comprises splitting a screen between at least two of the plurality of the programs.

9 31. The method according to claim 28, further comprising the step of:
10 encoding the combined signal.

11 32. The method according to claim 31, further comprising the step of producing
12 analog NTSC video waveforms from the combined signal.

13 33. The method according to claim 31, further comprising the step of modulating
14 the encoded signal.

15 34. A method for displaying a picture on a picture, comprising:

16 tuning to a plurality of programs;

17 decompressing a plurality of audio signals from the plurality of
18 programs;

19 decompressing a plurality of video signals from the plurality of
20 programs;

21 decompressing a plurality of graphics and text signals from the
22 plurality of programs, wherein the plurality of programs are comprised of both audio
23 and video signals and wherein at least one video signal may have a plurality of audio
24 signals corresponding therewith; and

25 outputting a plurality of decompressed signals from the decompressed
26 plurality of audio, video and graphics and text signals.

27 35. The method according to claim 34, further comprising:

28 demodulating the plurality of programs;

29 demultiplexing the plurality of programs;

1 decrypting the plurality of programs;
2 combining the plurality of decompressed programs;
3 encoding the combined program; and
4 modulating the encoded program.

5 36. The method according to claim 35, wherein the step of combining further
6 comprises overlaying at least one first program signal of the plurality of program
7 signals over at least one second program signal of the plurality of programs.

8 37. The method according to claim 35, wherein the step of combining further
9 comprises splitting a screen between at least two of the plurality of the programs.

10 38. The method according to claim 34, further comprising the step of:
11 switching between the plurality of audio signals.

12 39. The method according to claim 38, wherein the step of switching between the
13 plurality of audio signals further comprises:

14 switching between at least one audio signal in a first language
15 corresponding to the video signal and at least one audio signal in a second language
16 corresponding to the video signal.

17 40. The method according to claim 38, wherein the step of switching between the
18 plurality of audio signals further comprises:

19 switching between at least one audio signal in a first language
20 corresponding to the video signal and at least one audio signal in a second language
21 corresponding to the video signal.

22 41. An apparatus that outputs multiple video signals, comprising:

23 a first signal path having first signal processing components, wherein
24 the first signal processing components process a first video signal, the first signal
25 processing components also operable to scale and redirect the first video signal;

26 a second signal path having second signal processing components,
27 wherein the second signal processing components process a second video signal, the
28 second signal processing components also operable to scale and redirect the second
29 video signal; and

1 a microprocessor that controls processing on the first and the second
2 signal paths such that the first video signal and the second video signal are displayed
3 on a display, and wherein the first signal processing components and the second signal
4 processing components are substantially identical.

5 42. The apparatus of claim 41, wherein the first signal processing components
6 comprise:
7 a first tuner;
8 a first demodulator coupled to the first tuner;
9 a first demultiplexor coupled to the first demodulator;
10 a first video/graphics/text demultiplexor coupled to the first demultiplexor,
11 wherein the first video/graphics/text demultiplexor separates graphics, video and text
12 from the first video signal;
13 a first video decompressor coupled to the first video/graphics/text
14 demultiplexor; and wherein the second signal processing components comprise:
15 a second tuner;
16 a second demodulator coupled to the second tuner;
17 a second demultiplexor coupled to the second demodulator;
18 a second video/graphics/text demultiplexor coupled to the second
19 demultiplexor, wherein the second video/graphics/text demultiplexor separates
20 graphics, video and text from the second video signal;
21 a second video decompressor coupled to the second video/graphics/text
22 demultiplexor.

23 43. The apparatus of claim 42, further comprising a first decryptor and a first
24 memory in the first signal path and a second decryptor and a second memory in the
25 second signal path.

26 44. The apparatus of claim 41, wherein a quality of the first video signal equals a
27 quality of the second video signal.

1 45. The apparatus of claim 41, further comprising a video combiner, the video
2 combiner combining a processed, scaled and repositioned first signal and a processed
3 second video signal for display.

4 46. The apparatus of claim 45, wherein the processed, scaled and repositioned first
5 video signal is overlaid on the processed second video signal.

6 47. The apparatus of claim 46, wherein a size of the overlaid first video signal is
7 smaller than a size of the processed second video signal.

8 48. The apparatus of claim 45, wherein the processed second video signal is scaled
9 and repositioned, and wherein the processed, scaled and repositioned first and second
10 video signals are displayed in a split screen format.

11 49. The apparatus of claim 41, further comprising a third signal path having third
12 signal processing components, wherein the third signal processing components
13 process a third video signal, the third signal processing components also operable to
14 scale and redirect the third video signal, wherein the third signal processing
15 components are substantially identical to the first and the second signal processing
16 components, and wherein the first, second and third video signals are displayed
17 simultaneously on a display.

18 50. The apparatus of claim 49, wherein the first and the third video signals are
19 overlaid on the second video signal.

20 51. The apparatus of claim 49, wherein the first, second and third video signals are
21 displayed in a split screen format.

22 52. The apparatus of claim 49, further comprising:
23 audio decompressors in the first, second and third signal paths; and
24 a switch coupled to the audio decompressors, wherein the audio
25 decompressors provide audio signal associated with video signals, and wherein the
26 switch operates to select an audio output from one of the audio decompressors.

27 53. The apparatus of claim 41, wherein processed, scaled and redirected video
28 signals are provided as digital signals for display on a digital television.

1 54. The apparatus of claim 41, wherein the first signal path includes a first NTSC
2 encoder and the second signal path includes a second NTSC encoder, the first and the
3 second NTSC encoders operable to convert processed video signals and processed,
4 scaled, repositioned video signals to analog format for display on an analog television.

5 55. The apparatus of claim 41, wherein the apparatus is an upgrade card, the
6 upgrade card insertable into a set top terminal to provide digital picture-on-picture
7 capability.

8 56. The apparatus of claim 41, wherein the apparatus is an upgrade card, the
9 upgrade card insertable into a television to provide digital picture-on-picture
10 capability.

11 57. The apparatus of claim 41, wherein the first video signal is provided to a final
12 television and the second video signal is provided to a second television.

13 58. The apparatus of claim 41, wherein the second video signal is a close
14 captioned text display that corresponds to an audio signal related to the first video
15 signal.

16 59. The apparatus of claim 41, wherein the apparatus is a set top terminal.

17 60. The apparatus of claim 41, wherein the first signal path further includes first
18 audio processing components and the second signal path further includes second audio
19 processing components.

20 61. The apparatus of claim 41, further comprising a switch for selecting a first or a
21 second audio signal for display, the switch activated by operation of a remote control.

22 62. The apparatus of claim 61, wherein the first and the second audio signals may
23 be provided in multiple languages, and wherein a menu of available languages is
24 present on screen for selection of a desired language.

25 63. The apparatus of claim 61, wherein the first and the second audio signals are
26 associated with the first video signal.

27 64. The apparatus of claim 61, wherein the switch is operable to select additional
28 audio signals for display, the additional audio signals associated with the second video
29 signal.

- 1 65. ~~That apparatus~~ of claim 1, wherein the plurality of signals comprises HDTV
2 signals.
- 3 66. The apparatus of claim 2, wherein at least one video signal is a HDTV video
4 signal.
- 5 67. The apparatus of claim 16, wherein at least one video signal is a HDTV video
6 signal.
- 7 68. ~~The method~~ of claim 21, wherein the plurality of signals comprises HDTV
8 signals.
- 9 69. The method of claim 22, wherein at least one video signal is a HDTV video
10 signal.
- 11 70. ~~The method~~ of claim 26, wherein the plurality of video signal is a HDTV
12 video signal.
- 13 71. The method of claim 34, wherein the plurality of video signals is a HDTV
14 video signal.
- 15 72. The method of claim 41, wherein the first video signal and the second video
16 signal are HDTV video signals.

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